

Development of a Multipurpose Extruder/Press Food Processing System, Phase I

Completed Technology Project (2005 - 2005)



Project Introduction

Insta-Pro International, proposes the design and development of a versatile, compact, lightweight, energy efficient, and easy maintained seed processing equipment that can be operated in low gravity environments. The proposed equipment, a scale down refinement based on successful current large scale Insta-Pro processing systems, can be used for cooking, shaping, texturizing, dehydration, phase separation, and stabilization of crops such as rice, beans, peanuts and soybeans to support human planetary explorations. The equipment will be designed to use internally generated heat for processing food to reduce or eliminate the need for inherently inefficient heating from an external source. In addition, the equipment will be optimized to minimize the Equivalent System Mass (ESM) while maximizing the quality of the final product. Anticipated results for Phase I will be detailed plans for the design of the optimized food processing equipment attained by computational simulation of various concept designs. This optimum design will provide the basis for hardware development and testing in Phase II and the manufacture and marketing (in Phase III) to a wide array of users.

Anticipated Benefits

Potential non-NASA commercial markets for the proposed multipurpose food processor include: federal agencies such as the Department of Defense food services; private sector markets such as commercial airline, rail, and maritime food preparation systems and the fast food industry, as well as institutions of higher education such as food engineering research and educational programs. Customized versions of the proposed processor has the potential to be commercialized as low capacity equipment to process seed materials available only in small quantities for organizations involved in biotechnological innovations, for small agribusiness in developing countries and for home use. The primary NASA application will be for cooking, forming and shelf life extension of food crops in long duration space missions such as Lunar or Martian mission. Additional applications include liquid extraction in a low gravity environment to produce vegetable oil from peanuts or soybeans as well as potential use for dehydration and volume reduction of wet solid foods, and heat treatment for microbial or enzyme inactivation to reduce biological hazards associated with wastes.



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

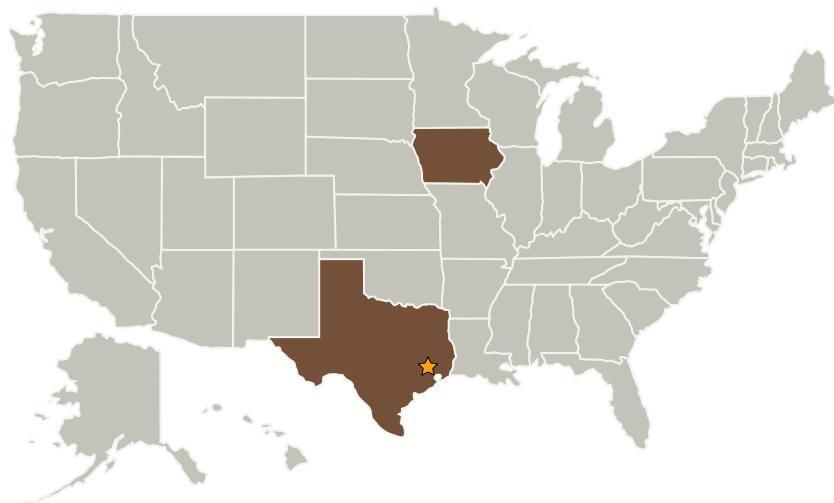
Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
Triple F, Inc.	Supporting Organization	Industry	Des Moines, Iowa

Primary U.S. Work Locations

Iowa	Texas
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Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Project Manager:

Vickie L Kloeris

Principal Investigator:

Wilmot Wijeratne

Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
 - └ TX12.5 Structural Dynamics
 - └ TX12.5.4 Test, Tools, and Methods